REMARKS

Claims 45 and 49 are pending in the application. In the Office Action dated November 29, 2007, the Examiner rejected claims 45 and 49 under 35 U.S.C. 102(a) as being unpatentable over the publication by Stampfer et al. (form PTO-1449). In view of the remarks that follow, reconsideration and a notice of allowance are respectfully requested.

Objection to the Specification

Applicants have amended the specification to remove the embedded hyperlink as indicated above. Reconsideration of the objection is requested.

§102(a) Rejection of Claims 45 and 49 by Stampfer et al.

In rejecting claims 45 and 49 under 35 U.S.C. 102(a) as being anticipated by Stampfer et al (page 1014-1015, form PTO-1449), the Examiner alleges that the alcohol dehydrogenase disclosed by the cited reference was obtained from the same organism as the isolated alcohol dehydrogenase polypeptide claimed by Applicants. Therefore, the Examiner takes the position that the referenced alcohol dehydrogenase "is 100% identical to the alcohol dehydrogenase of SEQ ID NO.48 of the instant invention." (page 4, instant Office Action).

Preliminarily, for a reference to anticipate a claimed invention under §102, it must adequately meet the terms of the claimed invention interpreted in light of the specification of the application. As set forth in the statute, the single prior art reference must disclose each and every element of the claim under consideration. Moreover, it cannot be rebuilt or reoriented by the utilization of Applicants' teachings in an attempt to create an anticipatory structure.

Claim 45 recites an isolated polypeptide having alcohol dehydrogenase activity, comprising the amino acid sequence of SEQ ID No. 48, or a variant of said sequence having up

to about 5% of the amino acids in the sequence of SEQ ID No. 48 replaced by different amino acids (emphasis added).

Claim 49 recites an isolated polypeptide having alcohol dehydrogenase activity, comprising the amino acid sequence of SEQ ID No. 48 (emphasis added).

Thus, both of claims 45 and 49 recite an isolated polypeptide having alcohol dehydrogenase and possessing a specific amino acid sequence of SEQ. ID No. 48. In contrast, the cited reference discloses an alcohol dehydrogenase activity from the whole cell lysate, even though obtained from *Rhodococcus ruber DSM 44541,* but NO amino acid sequence associated with the protein or proteins responsible for the described alcohol dehydrogenase activity is disclosed. The cited reference does not teach any isolated alcohol dehydrogenase. Thus, the cited reference fails to anticipate the claimed isolated polypeptides under §102, since it fails to disclose each and every element of the claimed invention.

The Examiner's position that the referenced alcohol dehydrogenase "is 100% identical to the alcohol dehydrogenase of SEQ ID NO.48 of the instant invention" is unsubstantiated in view of the following cited passage from page 1015, first column, 2nd paragraph:

> "Reduction mode: Whole lyophilized cells of *Rhodococcus ruber DSM 44541* grown on a standard medium (glucose, peptone, yeast extract) without enzyme induction catalyzed the reduction of [compound] 1a in aqueous buffer at pH 7.5.." (emphasis added)

and on the same page, 2nd column, 2nd paragraph:

> "Oxidation mode: Encouraged by these results, we examined the applicability of the system for the reverse reaction...Indeed, whole cells of *Rhodococcus ruber DSM 44541* exclusively oxidized the S enantiomer..." (emphasis added).

Thus, the cited reference discloses the alcohol dehydrogenase activity from the whole cell lysate of the organism *Rhodococcus ruber DSM 44541*, which is clearly different from an

isolated polypeptide having alcohol dehydrogenase activity, comprising a specific amino acid sequence.

In one embodiment of Applicants' claimed invention, a polypeptide recited by claims 45 and 49 was isolated from the organism *Rhodococcus ruber DSM 44541* after numerous experimental procedures, and represents ONE specific alcohol dehydrogenase, referred to as "ADH-A". In contrast, and as clearly stated in the specification of the instant application, the organism *Rhodococcus ruber DSM 44541,* as shown in Figures 1 and 2, and described in paragraph [0183] of the instant application (published US 2004/0157305), possesses "at least seven different sec-alcohol dehydrogenases". Applicants respectfully submit that a mixture of at least seven different sec-alcohol dehydrogenases is certainly NOT identical to a specific isolated polypeptide representing one specific alcohol dehydrogenase polypeptide, not in structure, not in composition, and certainly not in function.

The functions of the claimed polypeptides, having alcohol dehydrogenase activity, comprising the amino acid sequence of SEQ ID No. 48 or a variant thereof, are indeed distinct from those of the cited cell lysate having ADH activity. Even though both the claimed polypeptide and the referenced whole cell lysate with ADH activity can use the same substrate -- 2-propanol/acetone-- for the reduction and oxidation reaction, the claimed polypeptide exhibits a solvent stability which is unexpectedly and significantly more superior than the ADH activity of the prior art whole cell lysate. Indeed, for the reduction reaction, the claimed polypeptide has the highest activity (normalized to 100%) at 70% (volume/volume) substrate (2-propanol), and the activity remains high even at 80% 2-propanol (Table 7, instant application). In contrast, the referenced alcohol dehydrogenase using whole cell lysate has a solvent stability of only up to 50% substrate (2-propanol), and the dehydrogenase activity drops sharply at 60% substrate (page 1015, Figure 1, cited reference).

Similarly, for the oxidation reaction, the claimed polypeptide has very high activity up to 50% substrate (acetone), (Table 8, instant application), which is 10-fold higher than the activity exhibited by the prior art alcohol dehydrogenase from whole cell lysate, which shows an optimal activity at 5% substrate, but drops very sharply after that (page 1015, Figure 2, cited reference).

Thus, the claimed polypeptide exhibits unexpectedly much higher solvent stability relative to the prior art alcohol dehydrogenase. As such, the claimed polypeptide is clearly novel and distinct from the alcohol dehydrogenase from the prior art whole cell lysate.

In view of the foregoing remarks, Applicants respectfully submit that the cited reference fails to anticipate the claimed isolated polypeptide having alcohol dehydrogenase activity, comprising the amino acid sequence SEQ ID No. 48, since it fails to disclose each and every element under consideration as required by §102 (emphasis added).

Furthermore, Applicants respectfully traverse the Examiner's position that "the alcohol dehydrogenase of Stampfer et al. inherently possesses the same material structure characteristics as the alcohol dehydrogenase of claims 45 and 49 since both alcohol dehydrogenases are obtained from the same source and have the same function" (page 4, instant Office Action). Applicants also respectfully disagree with the Examiner's assertion that "the amino acid sequence of an enzyme is an inherent property of the enzyme, and the Examiner's conclusion that "even though the prior art does not disclose the amino acid sequence of the alcohol dehydrogenase, it still anticipates the claimed alcohol dehydrogenase".

With respect to inherent properties, MPEP 2112.01 states that, "when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established".

In the present case, the Examiner has not established a prima facie case of anticipation, because the claimed isolated polypeptide is NOT identical, or even substantially identical, in composition or structure, to the prior art mixture of at least seven different sec-alcohol dehydrogenases. The prior art alcohol dehydrogenase and the claimed polypeptide are NOT produced by identical or substantially identical processes. Other than coming from the same organism, the prior art alcohol dehydrogenase activity is derived from the whole cell lysate, whereas the claimed polypeptide is obtained only after numerous experimental purification

procedures. Thus, the amino acid sequence of the claimed polypeptide CANNOT be presumed to be an inherent property of the prior art alcohol dehydrogenase.

Accordingly, it was error to shift the burden of proof to Applicants "to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the alcohol dehydrogenase of the prior art does not possess the same material structure and functional characteristics of the claimed alcohol dehydrogenase)" (pages 4-5, instant Office Action) is unjustified. However, as set forth above, Applicants clearly have shown that the claimed polypeptide exhibits unexpectedly much higher solvent stability than the alcohol dehydrogenase from the prior art whole cell lysate, further distinguishing the claimed invention from the cited prior art.

Therefore, Applicants respectfully request reconsideration and removal of the rejection under 35 USC 102. Applicants submit that the application is in condition for allowance. Should the Examiner wish to speak with Applicants' attorney, he is invited to contact the undersigned at the telephone number identified below.

Respectfully submitted,
CHRISTIE, PARKER & HALE, LLP

By _____
John D. Carpenter
Reg. No. 34,133
626/795-9900

JDC/kmg

KMG IRV1112341.1-*-02/26/08 2:19 PM